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SECRET	25X1
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INTERNATIONAL ISSUES REVIEW	
31 July 1979	
CONTENTS	25 X 1
ARMS CONTROL	
ASYMMETRIES IN ARMS CONTROL: THE IMPACT OF EASTERN AND WESTERN MILITARY POSTURES ON SALT AND MBFR	25X1
Major differences between Eastern and Western military postures have complicated arms control negotiations at both SALT and MBFR. So far, they have not brought these negotiations to a stalemate because each side has been willing to accept limits on its comparative advantages in order to obtain explicit constraints on the relative strengths of its adversary. NUCLEAR POLITICS	25X1
THE SURVIVABILITY OF THE NPT	25 X 1
The challenges posed by possible future nuclear weapons proliferation and the slow pace with which signatories to the NPT meet their obligations to proceed with nuclear disarmament are likely to become serious topics of international debate between now and the second Review Conference on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) scheduled for July 1980.	25 X 1
THE HEAVY WATER NUCLEAR FUEL CYCLE: IMPLICATIONS	
FOR ENERGY SECURITY AND NUCLEAR PROLIFERATION	25X1
Although not in widespread use, the heavy water nuclear reactor holds certain attractions for developing countries because of its use of natural uranium, and it can pose nuclear prolif-	
eration risks.	25X1

Asymmetries in Arms Control: The Impact of Eastern and Western Military Fostures on SALT and MBFR One way to analyze generic arms control problems is through illustrative test cases. This paper approaches the general problem of the impact of military power on arms control by examining the effect of major asymmetries in the Eastern and Western military postures on SALT and MBFR. The paper summarizes current discussion over the impact of military asymmetries on arms control; describes the differences between USSR - Warsaw Pact and US-NATO deployments at both strategic and theater levels; and assesses the impact that these differences have had on SALT and MBFR. It concludes that military asymmetries have complicated both of these negotiations but have not stalemated them because each side has been willing to accept—or at least to consider accepting—some limits on its own comparative advantages in order to gain explicit constraints on the relative strengths of its adversary. * * * Strategic equations are very complex things, because the structure of the strategic forces, ours and the Americans', are far from being symmetrical. We have more of something else; in some things we are ahead and in others, they are. It is the merit of those who prepared the [SALT II] Treaty that they finally managed to create a general strategic equality from these many inequalities. Aleksandr Bovin Soviet commentator on strategic issues Moscow domestic cele—	Approved For Release 2008/09/02 : CIA-RDP80T00942A000500010007-2	05V4
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The Problem

Deployed and prospective military forces are the substance or facts of negotiations for arms control in much the same way that established and emerging national industries are the substance of negotiations on tariff reductions. It is generally assumed that bilateral arms negotiations are most likely to be successful when both sides have roughly similar military postures. In cases involving major military powers, however, the negotiating parties are likely to have fundamental—and possibly permanent—differences in doctrine and deployments. This suggests that an examination of the relationship between military asymmetries and the course of arms control negotiations is important both for understanding past negotiating patterns and for identifying possible future opportunities.

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At present, there are three general schools of thought on this problem. The first holds that even major asymmetries should have little impact on great power negotiations in the nuclear age. Proponents of this position maintain that the destructive power of nuclear weapons is so great that the maintenance of more than an assured retaliatory capability can have only minimal political or military value. In this view, there is little reason not to move toward significant reductions in existing arsenals.

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This line of reasoning stands in diametric opposition to the view of those who contend that major asymmetries must stalemate any arms control negotiations. Defenders of this second position maintain that the very existence of major differences in doctrine and deployments means that serious discussion of force reductions inevitably will focus on precisely those elements of each nation's military posture which it would be least inclined to constrain. The stalemate hypothesis usually assumes that a nation's arms control decisionmaking is dominated by domestic considerations such as pressures from the professional military and from defense-related industry, doctrinal beliefs about war or the need to

achieve military superiority, and a general inclination to preserve established programs and deployed forces.*

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The middle ground is held by a broad, ill-defined school of thought that argues, in effect, that parties to bilateral arms control negotiations will inevitably seek to preserve their comparative advantages, but also might be willing to concede some of these advantages if this could gain limitations on, or reductions in, their adversaries' strength. This view presupposes that decisionmakers are not constrained by domestic institutional pressures or by a belief that they can expect to achieve across-the-board superiority. It assumes that they are able to consider a range of military/arms control options for enhancing national security. Proponents of this view believe that it is possible, though far from certain, that political rivals can place meaningful limits on their military competition.

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The remainder of this paper tests these three hypotheses against the evidence of negotiations on USSR - Warsaw Pact and US-NATO forces at SALT and MBFR. The limits of this analysis must be noted at the outset. There are many similarities as well as differences between Eastern and Western military deployments. For example, both the USSR and the United States maintain a diversified nuclear deterrent, including land-based ballistic missiles, submarine-based ballistic missiles, and long-range bombers. Moreover, it is hard to isolate the role of individual force elements within the course of overall negotiations, both in SALT and in MBFR.

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*The stalemate hypothesis is reflected in the recent statement by a leading Western arms control analyst that the MBFR negotiations are an "irrelevance to Western ideas of stability" because there is "no way" in which the Soviet Union will "negotiate away its extant advantages on the ground." Colin S. Gray, contribution to section on "The Purposes and Value of Arms Negotiations," in US Senate, Committee on Foreign Relations, Perceptions: Relations Between the US and the Soviet Union (Washington, 1978) page 348.

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This being said, however, it remains clear that there are major differences in the structure of Eastern and Western forces at both the strategic and the theater level. These differences have been at the heart of some of the sharpest and most persistent disagreements in both sets of negotiations. An examination of the effect of East-West military asymmetries on SALT and MBFR should, therefore, contribute to our understanding of the broader problem of the impact of military power on arms control.

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East-West Asymmetries Affecting SALT and MBFR

Both doctrine and force deployments indicate that the Soviet Union and its Warsaw Pact allies believe that their comparative advantage relative to the United States and NATO lies in quick strike offensive forces. While Soviet writings on intercontinental nuclear war consistently state that the USSR would not be the first to use nuclear weapons, these writings stress rapid and carefully controlled use of ballistic missiles, and Soviet deployments indeed reflect this in their emphasis on land-based intercontinental missiles. The USSR has invested a considerably greater proportion of its nuclear capability--measured by criteria like number of warheads and equivalent megaton-nage--in ICBMs than has the United States. It has not attempted to maintain a relatively balanced strategic force triad, in which each of the three elements of the nuclear deterrent would be able to inflict unacceptable damage on an attacker.

At the theater level, Warsaw Pact doctrine calls for armor-led ground forces to seize the initiative and reach theater objectives as rapidly as possible. In deployments, the Pact has emphasized the key systems for rapid projection of ground power: tanks, in which the Pact has a 2-to-1 numerical advantage over NATO; armored personnel carriers; and weapons that offer mobile supporting firepower--self-propelled artillery, multiple rocket launchers, and mobile surface-to-air missiles. The USSR and its allies have responded to recent improvements in antitank defenses (as illustrated by the initial setbacks suffered by Israeli armor in the 1973 Middle East war) by strengthening the firepower, mobility, and diversity of weapons in the tank and motorized rifle divisions, rather than by moving to a more clearly defensive posture that would capitalize on the newer capabilities.

31 July 1979

The West apparently believes that its comparative advantage in military power lies in diverse retaliatory and defensive forces resting on a large, advanced, and flexible technological base. US strategic nuclear forces emphasize survivability against enemy attack (submarine-launched ballistic missiles, intercontinental bombers, and, prospectively, the mobile M-X ICBM); rapid technological innovation (for example, MIRVs and cruise missiles); and the application of advanced technology to unified weapon systems (for example, ABM in the 1960s). In the European theater, NATO has a 2-to-1 superiority in antitank forces and is probably superior in air defense. Even more important, NATO tactical nuclear weapons pose a potentially decisive threat to a Warsaw Pact offensive predicated on rapid advance.

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Western Negotiating Initiatives

A series of major disputes at both SALT and MBFR suggests that, contrary to the first hypothesis noted above, significant asymmetries in military posture are likely to have a marked impact on arms negotiations. Whatever the combination of reasons that leads the USSR and its allies to emphasize quick strike offensive capabilities, US and NATO policymakers have expressed concern that these capabilities may make possible a preemptive strike against US strategic forces and an attack on very short notice against NATO forces in Europe. As a result, the Western nations' arms control policy for both intercontinental and theater forces has concentrated on increasing what they term "stability" by limiting preemptive offensive capabilities while preserving and enhancing retaliatory and defensive capabilities. The West has implicitly argued that the East-West military balance would become more stable, and thereby less dangerous to both sides, to the degree that the Eastern force posture approached that of the West. 25X1

Throughout SALT I and SALT II, the United States has maintained that both sides would benefit from mutual self-restraint in improving their land-based ICBMs. US negotiators have argued that if both sides seek stability, and if stability depends in part on the survivability of the fixed land-based missiles on both sides, then each side should be concerned for the survivability of the other's ICBMs and thus should accept limits on the modernization of its

31 July 1979

own. This US argument—and a series of specific proposals to implement it—have been designed to protect the US Minuteman ICBM from the potential threat of Soviet ICBMs. However, the US approach has offered potential gains to the USSR as well. Limiting the modernization of US missiles would improve the survivability of Soviet land-based missiles, which are a much more important part of the total Soviet strategic force than US ICBMs are of the total US force.

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At MBFR, the West has taken a somewhat similar approach to limiting those forces that it sees as most necessary to a successful Warsaw Pact attack in Europe. NATO set the formal negotiating goal of gaining significant asymmetrical reductions in ground force manpower and of reductions in, and limitations on, Soviet armored forces in central Europe. Since the negotiations began, the West has contended that the Eastern superiority in ground force manpower, and particularly in tanks, constituted the greatest threat to military stability in Europe (that is, to Western security). The initial Western proposal specified withdrawal of an entire Soviet tank army -- a major operational element consisting of five divisions and 1,700 tanks--as well as substantially greater reductions in Eastern than in Western manpower. Subsequent Western proposals have kept this thrust, while adding concessions to Soviet concerns about Western forces.

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Eastern Responses

The Soviet Union and its Warsaw Pact allies have been led by their doctrine and deployments to view this Western approach to arms control as self-serving and one-sided. At SALT, the Soviets have consistently stated that the US proposals to limit ICBM modernization are intended to weaken the USSR's strongest system rather than to increase the security of both sides against preemptive attack, as the United States argues. The Soviets apparently believe that a shift in emphasis from land-based missiles (which the United States considers destabilizing) to sea-based missiles and bombers (which the United States regards as stabilizing) would mean a shift in the Soviet-US competition toward those capabilities in which the United States has an advantage.

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31 July 1979

In SALT I, therefore, the Soviets refused to accept a joint definition of heavy missile that would have precluded deployment of their forthcoming SS-19 ICBM. In the final two years of the SALT II negotiations, they insisted on a definition of new types of ICBMs that would allow them to make significant improvements to their presently deployed force. To achieve this freedom to continue modernization of their ICBM force, the Soviets were willing to forgo possible opportunities to limit the prospective US threat to Soviet ICBMs.* They sought, in general, to keep the negotiations close to the 1974 Vladivostok accord, whose freedom-to-mix formula permitted each side to emphasize its comparative advantages.

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Similarly, the East has argued at MBFR that Western proposals to reduce the number of tanks and ground force manpower asymmetrically represent efforts to limit Warsaw Pact strengths and to alter the European balance of power to the advantage of the West. The Warsaw Pact rejected NATO's initial proposal for removal of a Soviet tank army. It has tried to deflect the thrust of Western negotiating strategy by insisting that MBFR not interfere with the basic Eastern military posture--specifically, that no ground force units larger than divisions be considered and that each side be allowed to choose which tanks and other equipment will be removed. In order to preserve its comparative advantage in armor, the East has been willing to give up possible leverage for negotiating limits on those NATO systems--most notably, the new US XM-1 tank and West German Leopard II tank--that will enhance NATO's capabilities for an advance into Warsaw Pact territory.

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Trade-Offs of Comparative Advantages

Although the SALT and MBFR negotiating records disprove the first hypothesis described above—that major military asymmetries will have little or no effect on arms negotiations—they also do not seem fully to support the opposing hypothesis—that such asymmetries will stalemate arms negotiations. In both sets of talks, the two sides have been willing to accept, or to consider seriously, limitations on their comparative advantages. Both parties

31 July 1979

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appear to have been able to override domestic doctrinal and institutional pressures against accepting suchlimits by arguing that effective arms control bargaining could produce net gains for national security.

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The course of negotiations suggests that both East and West have acted upon the assumption of the third hypothesis—that nations may be willing to accept limits on their own comparative advantages if this appears the only way to constrain the forces that represent the relative strength of their adversaries. Put differently, both sides have recognized that their greatest security asset is their power to offer restrictions on those elements of their present and prospective deployments that causetheir adversary the greatest concern.

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For the purposes of this analysis, the SALT I agreements represent a relatively straightforward trade of the comparative advantages limited by the ABM treaty for those limited by the Interim Agreement on offensive forces. Soviet Union was willing to accept some limits on its buildup of offensive forces in order to gain explicit constraints on ballistic missile defenses, an area where the United States had the lead in quality of deployed systems and in which US superiority in advanced technology made it particularly suited to compete successfully. United States was willing to limit severely its efforts in this area of comparative advantage partly because it hoped that the combination of explicit constraints in the Interim Agreement and the political climate of detente would restrict the improvement of the Soviet ICBM force sufficiently to preserve the viability of Minuteman as a retaliatory force.

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The calculations in SALT II appear less clear-cut. The USSR, however, seems to have concentrated its efforts on limiting a potential across-the-board modernization of US intercontinental and theater nuclear forces. The Soviets gained temporary prohibitions on deployments of selected systems in the protocol, and they are encouraging the United States to exercise restraint in future deployments by holding out the prospect of significant reductions in ICBM capabilities in SALT III. The United States appears to have judged the SALT II treaty worthwhile largely because, despite the Soviet refusal to accept a

31 July 1979

severe definition of new types of ICBMs, they did agree to some limits on improvement of the Soviet ICBM force and to the first reduction in the number of deployed offensive forces. 25X1 Trade-offs of comparative advantages have been less central to the course of negotiations at MBFR. Disagreement over basic data on the number of deployed forces has been far more important at MBFR than at SALT. the Eastern proposal for national ceilings on forces within each alliance has brought multilateral political 25X1 and military considerations into greater prominence than in the bilateral SALT I and II negotiations. Nonetheless, there are indications that both sides at MBFR recognize that asymmetries in military posture are a major impediment to progress and that both may be willing to accept trade-offs involving these asymmetries. In 1975 the West offered to withdraw a small proportion of its tactical nuclear forces (Option III) as an induce-25X1 ment for the East to accept asymmetrical reductions in both tanks and Soviet mannower 25X1 25X1 Subsequently, the Warsaw Pact agreed in its June 1978 proposal to withdraw certain armored and other ground combat forces--though a smaller number than the West had proposed--as part of a package including the Option III nuclear forces. 25X1 Conclusion

The experience of SALT and MBFR indicates that the impact of military asymmetries on arms control negotiations probably will be important but manageable. Asymmetries in strategic and theater forces have been central to the course of both SALT and MBFR and almost certainly have slowed progress in these negotiations. It seems reasonable to assume that future East-West arms talks-on these or other fields of military competition--probably will encounter similar difficulties in limiting forces

31 July 1979

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that either side believes to represent its comparative advantage. The record also suggests, however, that even major asymmetries need not lead to stalemate. Both parties have shown some willingness—more at SALT than at MBFR—to consider limitations on their own relative strengths if this allowed them to enhance their security by placing explicit constraints on the forces that represented the relative strengths of their adversaries.

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These findings have generally positive implications for arms control. Their meaning for specific East-West negotiations, however, will depend on both sides' perceptions of the political-military environment. To the extent that each side is seriously concerned about prospective deployments by the other, it has an incentive to accept formal constraints on some of its own comparative advantages in return for explicit limits on the relative strength of its adversary. To the extent, however, that it judges that force improvements by its adversary are either extremely unlikely or irreversible regardless of the arms control environment, it loses the incentive to seriously consider trade-offs that would restrict its own strengths.

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31 July 1979

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The Survivability of the NPT

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As the second Review Conference on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)--scheduled for June 1980--approaches, questions are likely to arise concerning the durability of the present nonproliferation regime. In particular, the ability of the NPT to withstand the challenges presented by possible future nuclear weapons proliferation and by the slow pace of the nuclear weapons signatories in meeting their treaty obligation to proceed with nuclear disarmament will be cited as potential causes of trouble at the conference. In order to assess the future of the NPT, as well as other aspects of the international nonproliferation regime, it is necessary to analyze the stakes that the various groups of players have in its continued existence. This paper examines the broad interests of major categories of treaty signatories in preserving or destroying the international nonproliferation regime. It concludes that almost all the signatories, including even would-be proliferators, have a strong interest in maintaining the NPT.

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For the sake of analytical clarity, NPT signatories can be divided into three basic categories: the nuclear weapons states, the industrialized nonnuclear weapons states (NNWS), and the less developed countries (LDCs).* Each of these groupings has a stake, albeit differing

*The motivations of treaty parties for signing the NPT and of non-parties for withholding signature are beyond the scope of this paper. The former are a matter of history. The latter might include the alleged irrelevance of the treaty to a small country with limited resources; the desire to preserve the leverage apparently offered by withholding obviously prized signatures; the intent to demonstrate national resistance to superpower pressures; the perceived inequities embodied in the treaty regime; or, in the most extreme cases, a desire to maintain the option to develop nuclear weapons.

31 July 1979

11

in degree and motivation, in the preservation of the NPT. Even potential proliferators among the industrialized or developing nations may perceive certain advantages in maintaining the integrity of the treaty. These perceived incentives, as much as other factors, will determine the behavior of the various groupings at next year's NPT Review Conference.

Motivations that may apply to the majority of countries within a grouping, however, will probably not apply to all countries within that grouping. Furthermore, the relative rankings of national interests will vary with time and circumstances—dimensions that are beyond the scope of this study. Nevertheless, despite the danger of oversimplification, the identification of generally shared sets of interests remains an important tool for dealing with the particular challenges presented by complex multilateral issues. This article seeks to establish a framework for understanding the broader strengths—or vulnerabilities—of the NPT regime as they appear in multilateral nonproliferation contexts. It does not attempt to predict the behavior of treaty signatories in the face of dramatic adverse events, such as nuclear explosions by NNWS.

The Nuclear Weapons States

The nuclear weapons signatories of the NPT--the United States, Great Britain, and the Soviet Union--regard the treaty as a political instrument for containing the threat of nuclear proliferation. While their reasons for opposing the spread of nuclear explosives may vary--for example, maintaining strategic preeminence, limiting destabilization, reducing the potential for massive destruction--each views with alarm most instances of potential nuclear proliferation. They recognize their obligation under Article VI of the treaty to negotiate "effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament. . ." although they have demonstrated a reluctance to comply swiftly.

Industrialized Nonnuclear Weapons States

The industrialized NNWS, such as the nations of the Organization for Economic Cooperation and Development and of the Warsaw Pact, generally share the superpowers'

31 July 1979

12

commitment to the NPT. For them, too, the treaty provides a mechanism for dealing with the proliferation threat. It also affords a means of solidifying their status in relation to less advanced nations which could attempt to "leapfrog" the development process to gain status and credibility by acquiring nuclear weapons. At the same time, however, most of the industrialized NNWS have close security relationships with the nuclear weapons states. They are therefore anxious to ensure that nuclear disarmament does not jeopardize the ability of their particular nuclear ally to uphold its security guarantees. Thus, although compliance with Article VI would offer them enhanced relative power (by reducing that of the nuclear weapons states), and although it may decrease the threat of nuclear war, the industrialized NNWS would not welcome arms control measures that significantly weakened their nuclear ally without extracting at least comparable concessions from the nuclear adversary. They are unlikely, therefore, to issue more than symbolic calls for greater superpower disarmament, particularly in potentially volatile multilateral forums such as the NPT Review Conference.

The industrialized NNWS also have a stake in Article IV of the NPT, which guarantees treaty signatories access to nuclear technology for peaceful applications. Many of the industrialized NNWS have significant peaceful nuclear programs, and the assured access is important to them, both as consumers and as suppliers of advanced nuclear technology. As a result of the US Nuclear Nonproliferation Act of 1978, a number of these states have come under US pressure to increase the safeguards on their own nuclear facilities, as well as those on their nuclear exports. They will probably argue that this is inconsistent with the Article IV undertaking but will generally avoid pushing this issue so hard that the treaty regime could be destroyed, both because of their commitment to the treaty itself and because of their vital links with the superpowers.

The Less Developed Countries

The LDCs are the most troublesome group for the non-proliferation regime. Although they are by and large less concerned about the generalized threat of nuclear war, they share some of the developed nations' motivations for

31 July 1979

supporting the NPT. The treaty affords them assurance-within limits--that rival states that are signatory to the NPT will not attempt to gain Third World or regional leadership by developing nuclear weapons. More important to the developing countries, however, is the treaty's legitimization of their demands for nuclear disarmament which would, not incidentally, lead to a perceived increase in LDC status and strength relative to that of the nuclear weapons states. Furthermore, they value the treaty assurance of access to nuclear technology for peaceful applications. Like the industrialized NNWS, many of the LDCs with nuclear programs or an interest in developing nuclear technology are upset about recent US nonproliferation legislation which they, too, consider to be in violation of Article IV. LDC criticism of the United States for its perceived failure to comply with this aspect of the NPT is almost inevitable at the Review Conference. The strength of such attacks is likely to depend on a number of factors, including current bilateral relationships with the United States, the relative importance each LDC accords the acquisition of nuclear technology, and possible exogenous motivations, such as a country's desire to gain credibility among the nonaligned states through rhetorical prowess. It will also, of course, depend on the relative ranking of each LDC's expectations regarding Article IV compared with other perceived benefits of the NPT regime.

Although the degree of LDC treaty signatory commitment to the NPT varies, those signatories that—for any of these reasons—have the greatest interest in the treaty would also be unlikely to give up the advantages it offers them. Thus, while LDCs that are truly interested in achieving progress in nuclear disarmament will probably criticize the lack of decisive momentum in nuclear weapon state disarmament negotiations, they are likely to accompany this criticism with praise for the steps that have been taken and to call for further progress. And while awareness of their lack of individual national leverage over superpower behavior might tempt some LDCs to adopt an implacable group posture at the conference, their perceived stakes in the survival of the NPT are likely to restrain all but the most radical.* The more motivated

^{*}The manner in which various possible developments relating to SALT II and CTB might affect the atmospherics and specific country positions at the NPTRC is too complex an issue to be addressed here.

and impatient LDCs may threaten to withdraw from the treaty if the superpowers do not live up to their obligations by making more significant progress toward nuclear disarmament. They might perceive this threat as a bargaining ploy, but they must recognize that if they actually withdrew or caused the collapse of the treaty regime, they would forfeit this leverage.

Isolated cases of withdrawal may occur, but these would probably be for reasons other than the nuclear disarmament issue—the desire to demonstrate defiance of the superpowers, or possibly to gain more freedom to pursue a nuclear weapons program—although the withdrawing country might cite lack of compliance with treaty obligations by a superpower as the rationale for its behavior. In any event, such cases are unlikely to cause a general stampede that would imperil the treaty. It could even be argued in the case of would-be proliferators that their withdrawal would enhance, rather than weaken, the treaty. A NNWS could do more damage to the NPT's nonproliferation credibility by demonstrating a nuclear weapons capability while remaining a party to the treaty than by withdrawing well before taking this step.

Challengers

As already noted, even potential proliferators can find some utility in the NPT. Like the other NNWS, these states must recognize the treaty as a useful mechanism for blocking rival nuclear development, as well as for exerting leverage on the superpowers. In addition, however, NPT signature facilitates the acquisition of critical nuclear technology, albeit under safeguards that some states might eventually wish to circumvent. It offers a cloak of legitimacy, as well as rendering the proliferator less conspicuous; suppliers are less likely to scrutinize the motivations of an NPT signatory than of a treaty "holdout." Thus, it seems unlikely that even potential proliferators would deliberately destroy the treaty regime, despite their possible efforts to avoid its constraints.

Only a small group of radical LDCs, such as Benin and Mali, might press for a showdown on the NPT. This group of countries views the treaty—as well as numerous other multilateral arrangements—as vestiges of a political order they wish to destroy. They probably would attack the treaty behavior of the nuclear weapons states even

if LDCs had full, unconditional access to nuclear technology or if the weapons states took decisive steps in nuclear stockpile reduction. The positions of these LDC diehards are well known to their colleagues in the Third World and, while not dismissed out of hand, do not exert undue influence. Their inflammatory rhetoric will have little impact on the behavior of other, more moderately oriented LDCs, except, perhaps, somewhat to radicalize public statements about the superpowers. The LDC radicals, therefore, pose no real threat to the NPT, although they can be counted on to cause the superpower representatives some moments of discomfort at the NPT Review Conference.

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31 July 1979

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The Heavy Water Nuclear Fuel Cycle: Implications for Energy Security and Nuclear Proliferation

The interest shown by various countries in heavy water reactors and the technology for their fuel cycle has periodically attracted the concern of US intelligence and policy communities -- especially since 1974, when India tested a nuclear explosive device that used plutonium obtained from a Canadian-built heavy water research reactor. The close attention currently being paid to Argentina's nuclear plans and tactics is another case in point. These developments generally have been analyzed only on a piecemeal basis. article that follows looks at the prospects for, and implications of, the development of heavy water nuclear fuel cycles in a broader geographic and multiissue perspective. It outlines the approach and central argument of a lengthy study that is scheduled to be published in August.

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The Problem

Although not in wide use today, the heavy water nuclear reactor has features that could recommend it to many developing countries for political, economic, and military reasons. For nations desiring to reduce their dependence on energy sources controlled by a few foreign suppliers, heavy water power reactors pose an attractive alternative because they can use natural--rather than more tightly controlled enriched--uranium for fuel. For nations seeking to develop a nuclear weapons capability, reactors moderated by heavy water--especially small and potentially concealable research-scale facilities--have the advantages of being difficult to safeguard and of providing a rich source of weapons-grade plutonium.

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There are a number of countervailing considerations, however, that could continue to impede the spread of heavy water reactors and technology, for example, the

31 July 1979

17

limited availability of heavy water. This paper explores the technical and nontechnical concerns judged likely to encourage or discourage selection of the heavy water fuel cycle, with a view to establishing an analytical framework for assessing:

- -- The primary determinants that have shaped the extent and patterns of demand for heavy water reactors and technology to date.
- -- The legitimacy of the LDCs' perception that the nuclear supplier states are acting in a cartel-like manner to restrict the transfer of heavy water technology.
- -- The short- and longer term significance of Argentina's efforts to play one supplier against another in hopes of obtaining an independent heavy water nuclear fuel cycle in the face of US opposition.
- -- The likely future dimensions and patterns of demand for heavy water production and reactor technology.
- -- The danger that the heavy water route will result in nuclear proliferation over the next five to 10 years.

Current Levels and Patterns of Demand

Political and economic factors have tended to discourage the interest of most industrialized nations in heavy water reactor technology. The major exception is Canada, which markets this technology. Their disinterest results from:

-- The decision by many industrialized nations in the 1960s to acquire the US-designed light water reactor, which makes it financially prohibitive for these countries to switch to a different thermal reactor.

31 July 1979

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18

- -- The fact that the power output of the typical heavy water commercial reactor is--in contrast to that of a typical light water reactor--lower than optimum for central power stations in the major industrialized nations.
- -- The general expectation that there will be an adequate supply of enriched uranium for light water reactors during the coming decade.
- -- The belief, shared by most major industrialized nations, that the fast breeder reactor is the technology that promises the greatest fuel economies in the long run.

In contrast, at least 10 LDCs seem to believe that the heavy water reactor would best serve their needs. Most of them favor natural uranium reactors because they want to escape dependence on industrial nations for uranium enrichment services. But a few nations that believe themselves particularly threatened—for example, Taiwan, South Korea, and Pakistan—are apparently interested in heavy water reactor technology at least in part because of military objectives.

A Heavy Water Cartel: Myth or Reality?

More than 400 tons of heavy water are required to start up a 600-megawatt heavy water reactor. As many as 30 to 60 additional tons may be needed each year to compensate for operational losses. Since few developing nations have even limited heavy water production facilities of their own, the availability of heavy water from foreign sources is a matter of considerable concern.* Some developing nations like India maintain that a cartel of heavy water producers threatens their nuclear programs because a handful of industrialized nations—primarily Canada, the United States, and the Soviet Union—control the market and arbitrarily restrict the transfer and use of heavy water and associated technology.

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*Although information on heavy water production technology is readily available in open literature, construction of anything beyond a pilot-scale facility is beyond the capabilities of most LDCs.

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While dependence on the industrialized nations for heavy water is real, the supplier states do not constitute a cartel because they have not attempted to agree on production levels. There are also sharp differences among them about the need to restrict and safeguard heavy water production technology. Furthermore, some supplier states are sufficiently desperate for export orders that they are not inclined to support US nonproliferation policies fully.

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These factors have enabled Argentina to play one supplier state against another in an effort to obtain a complete heavy water nuclear fuel cycle under less than full-scope safeguards. Although it is the first Third World nation to challenge US policy on this issue, Argentina should not be considered a test case. There is little reason to believe that the outcome, one way or the other, of Argentina's negotiations with its would-be suppliers will establish a precedent with respect to future attempts to acquire that particular technology by other developing nations. Argentine prospects are governed by a combination of circumstances unlikely to be duplicated in any other LDC.

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Likely Future Dimensions and Patterns of Demand

There are a number of developments, however, that could encourage the spread of heavy water reactor technology. Should, for example, the energy crisis deepen in the 1980s, more nations might turn to heavy water in order to avoid a politically and economically undesirable degree of dependence on enrichment services that can be provided by only a few industrialized nations. While unlikely, a related development that could accelerate this trend would be the emergence of technical problems or intramural disputes within the West European uranium enrichment consortiums--URENCO and EURODIF--of such severity that they would threaten future production.

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Nonetheless, we believe that the anticipated availability of ample supplies of enriched uranium for light water reactor power programs in the 1980s will moderate pressures felt by either industrialized or less developed nations to acquire heavy water reactors. Furthermore,

some LDCs motivated solely by a desire for a nuclear weapons capability may conclude that the heavy water nuclear fuel cycle is not necessarily the best route--particularly if Pakistan succeeds in demonstrating that a Third World nation with only a modest industrial base can obtain and master enrichment technology. Thus, it seems likely that the market for heavy water reactor technology will remain small in the coming decade.

Implications for Proliferation

The heavy water nuclear fuel cycle will still pose a proliferation risk even if the demand for reactors and heavy water production technology does not expand 25X1 substantially. As previously indicated, a heavy water research reactor is an excellent source of weapons grade material.

Three such nations—South Korea, Taiwan, and Romania—have some experience with either a heavy water reactor or heavy water production technology that they could draw upon for military purposes. In view of the obstacles that each would have to overcome, however, there is little reason to believe that any of these nations could obtain sufficient amounts of plutonium for a weapons device from an unsafeguarded heavy water reactor before 1985.

Concluding Observations

Whatever the practical significance of heavy water reactors for commercial or noncommercial purposes, this particular nuclear fuel cycle will remain an important topic in the continuing controversy between industrial and developing nations over the issue of technology transfer. In this broader context, Argentina's attempt to develop an autonomous heavy water nuclear fuel cycle could, if successful, have a considerable psychological impact. Despite the unique qualities of the Argentine case, the LDCs as a group might draw encouragement from

31 July 1979

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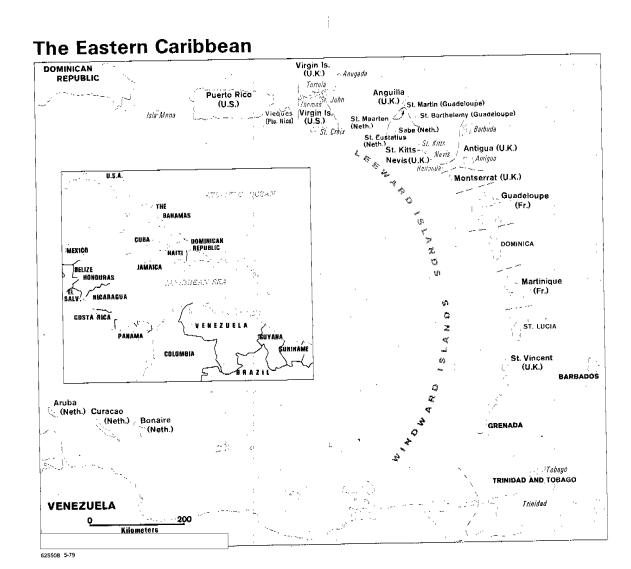
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it as additional evidence that US efforts to tighten international nuclear controls can be effectively resisted. Those supplier governments and corporations that similarly view US nuclear policies as unnecessarily restrictive and as damaging to both the world energy outlook and their own economic interests—might also be encouraged to adopt a more aggressive policy with respect to the sale of technologies prone to proliferation.

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Factors Contil	25 X 1
Eastern Caribbean: Rising Cuban Influence*	
One striking and unsettling aspect of changing international relations is the rising influence of certain less developed states (LDCs) in their geographic regions. In some cases, such as that of Brazil, the increased ability to project influence is clearly explicable in terms of the country's actual economic, political, and military strength relative to its neighbors and other potential competitors for power in the region. In other instances, however, the reason why certain states are gaining new regional influence is not so self-evident. The emergence of Cuba in the past year or so as a power in the Caribbean is	
a case in point.	25X1
Despite the fact that Venezuela and Mexico, by most objective measurements, are more powerful nations, Cuba has become the primary activist and counterweight to US influence within the region. In Cuba's case, the sense of national purpose and ambition of its leaders to be a regional power outweigh its relatively weak position vis-a-vis Mexico and Venezuela in terms of available economic and-to a degree-technical resources. Moreover, Mexico and Venezuela are at a comparative disadvantage in a strategic sense because they have not focused their attention on the	25 X 1
Caribbean and lack negotiating strategies that could	



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be competitive with or superior to Cuba's. In addition, the kinds of diplomatic, economic, technical, and military assistance that Cuba can offer the countries of the Caribbean--especially the smaller islands--closely match their most immediate short-term needs and the desires of their new leaders.

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Cuba's involvement in the Caribbean can only deepen and spread as it develops foreign assistance programs and as it strengthens diplomatic and security ties with its new allies. Jamaica and Guyana, which have close relations with Havana, have already begun to help Cuba widen its sphere of influence. Other island states, not directly affected by the recent political developments, will probably also seek to improve relations with Cuba for a variety of reasons, including the opportunity to attempt to distance themselves from the United States for reasons of nationalism and the attraction that "progressive" Cuba holds for the islands' youthful population.

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Over the long term, however, there may be sharp limits on the extent to which Cuba can pull these countries into its political orbit by attempting to underwrite their well-being. The limits are created in part by the perception of the countries in this area that the United States would react in some defensive manner if it believed that its influence, security, and economic interests were adversely affected by the organization of a hostile bloc in the Carib-But even more importantly, Cuba's ability to wield influence in the region will probably be limited by the constraints on its own economic development and the restricted nature of the foreign assistance it can offer, that is, low-level technical aid and personnel and some security assistance, but little in the way of markets, investment funds, tourists, or breakthrough technologies. As a consequence, the countries of the Caribbean are likely to become more authoritarian and leftist, but it is also likely that the extent of their hostility toward the United States and the industrialized West generally will be restrained by their awareness that at some point they will need to draw upon these sources for assistance to meet their overwhelming development needs.

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31 July 1979

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Basic trends in the economically troubled islands of the Eastern Caribbean--which contain about 2.5 million people in a land area smaller than the state of Connecticut--are eroding democratic traditions and opening up opportunities for a growth of Cuban influence. Havana is exploiting the economic and political instability and is making significant gains among an emerging generation of West Indian leaders that is generally sympathetic to Cuba's social achievements and is often wary of the United States and other Western countries, which are generally identified with the islands' "old guard." Five independent ministates have been established among the 11 mostly English-speaking countries in the region since 1962, and three more are expected to follow within the next year.

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Since the early 1970s, the islands have been hard hit by increasing oil import costs, declining commodity export earnings, and a stagnation of foreign investment. Unemployment on most of the islands now afflicts 30 percent or more of the labor force and is much higher among the younger population. Rapid population growth, despite rising illegal emigration to the United States, aggravates the problem. The median age in the region is 16, and disaffected youth provide a broad base of support for pro-Cuban leftists. The economic downturn has also stepped up middle class emigration, which is robbing moderate political groups of effective leadership.

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Cuban and local leftists are making their greatest gains among the English-speaking islands, which are moving most rapidly to independence. All of the eight islands expected to be independent by the end of next year are former British colonies, and most are losing security assistance from the United Kingdom at a time when small, action-prone radical groups are achieving unprecedented political influence. The French islands of Martinique and Guadeloupe, and the Netherlands Antilles, which will probably become independent early in the 1980s, have powerful leftist parties but are more stable because they still receive large amounts of metropolitan economic aid and security assistance.

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Recent Changes in Government

The coup in Grenada on 13 March was the first unconstitutional seizure of power in the English-speaking Since then, rapid constitutional turnovers in three other islands--whose timing was coincidental-have greatly increased Cuban influence. The crisis in Dominica, when widespread demonstrations forced the government to resign last month after only seven months of independence, resulted from a longstanding conflict between a scandal-ridden government and conservative labor The new Prime Minister, Oliver Seraphin, is a unions. young political opportunist who has appointed to the 25X1 Senate the leaders of the country's three previously peripheral leftist groups.

The election early this month in Saint Lucia, independent only since February, was scheduled as required by the constitution. An electorate that had nearly doubled over the past five years because of an infusion of young voters removed a long entrenched government that had become increasingly unpopular among moderate pressure groups. The new ruling party is dominated by pro-Cuban leftists led by Deputy Prime Minister George Odlum, who is likely to become head of the government early in its five-year term.

In Saint Kitts-Nevis, the death of Premier Southwell in May brought to power Lee Moore, a relatively young former black power activist, who intends to achieve independence for his two-island country by next year and who probably will follow a nonaligned foreign policy favorable to Cuba, even though he appears to be a moderate on economic policy and basically friendly toward the United States.

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In the Netherlands Antilles--which comprises three main islands off the coast of Venezuela and three smaller islands in the Eastern Caribbean--labor unrest earlier this year forced the resignation of the moderate, pro-western government. The leftist movement for a new Antilles won a plurality in the 6 July election and is expected to form a government sympathetic to Cuba but restrained by the strong local influence of the Netherlands, Venezuela, and the United States. The youthful leader of the movement, Don Martina, is a US-educated former black power advocate with a broad base of support among blacks on the largest island of Curacao.

31 July 1979

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Except in strongly democratic Barbados, chances of instability are increasing in the region. The government of Antigua, which also hopes to gain independence by next year, could be toppled because of a growing scandal involving the illegal transshipment of arms. The moderate opposition would likely win a near-term election, but a small pro-Cuban leftist group is making political 25X6 Trinidad and Tobago's oil-based economy has eased problems there and is gradually opening new employ-25X6 ment opportunities, but Prime Minister Williams has discouraged broadened political participation and increased chances 25X1 of political instability in the long term. Cuban Activism Cuba has moved quickly and effectively to exploit regional trends. Since 1976, Havana has made numerous offers of technical assistance to established governments and has courted local radical groups. past, Cuba has been treated coolly by the governments of Antigua, Saint Kitts-Nevis, and Barbados, and with mild hostility by Trinidad and Tobago. Cuban prospects have increased dramatically, however, because of the changes of government in Grenada, Dominica, Saint Lucia,

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Youth-oriented Cuban friendship societies that are active throughout the region are slowly building support for Havana. Cuba will transport youth delegations from several of the islands to a Caribbean festival in Cuba later this month. It also recently has assigned a high-level regional expert as Ambassador to Jamaica, presumably to coordinate Cuban policy in the English-speaking countries of the Caribbean.

and the Netherlands Antilles.

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The Cubans have invested most in Grenada and their efforts have paid off. Although Prime Minister Maurice Bishop was committed to close relations with Cuba from the outset, he is now heavily indebted to Havana

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Prospects

Severe economic problems probably will continue to erode democratic institutions and to open the region to political leaders offering new models of development. The new generation of leaders—many of whom were educated in North America and in the United Kingdom at the height of the black power and antiwar movements—are strongly oriented toward a larger government role in their economies and are not drawn to parliamentary politics on the British model. While continuing to seek Western aid, they will favor strong central governments that they believe are more capable of implementing far-reaching economic reforms.

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Nevertheless, in all the islands, new leaders will have to contend for the near future with the conservative influence of powerful trade unions, active opposition parties, the church, the private sector, and the relatively independent press. In small island societies, 25X1 moreover, they also are likely to be influenced by moderate familial and old-boy ties that have traditionally submerged ideological considerations.

Cuba and local leftists will continue to benefit from the rise of a new generation of West Indian nationalists and from the extreme social and economic problems it faces. Cuban influence is becoming increasingly legitimate because of Havana's active participation in the growing youth-dominated dialogue among regional 25X1 labor, women's, youth, and press groups. This contrasts with the identification of the Western countries with the Caribbean's fast disappearing old guard.

Regionally, the changes in government will broaden and intensify the ideological conflict started by the Grenada coup and will hurt US-backed initiatives promoting interisland cooperation in the security field. Last weekend, the new leaders of Saint Lucia and Dominica ended their predecessors' official hostility toward Grenada and met there for a tripartite "microsummit" on regional affairs.

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31 July 1979

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These new governments--with encouragement from Cuba--are likely to promote their own brand of regional cooperation that minimizes US political influence and overrides the conservative inclinations of old guard leaders in Antiqua, Saint Vincent, Barbados, and Trinidad and Tobago.

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On the world scene, the continued increase in the number of independent nations in the eastern Caribbean could present problems for international organizations such as the Organization of American States, in which the ministates will have disproportionate influence. The potential international role of the ministates is limited, however, by their sparse resources, by their desire for broad outside economic assistance, and by their historical tendency to act independently of one another.

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Terrorism and Insurgency: Is There a Narcotics Connection?

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Trafficking in illicit drugs is a lucrative and generally nontraceable source of funds for many illegal activities, but most terrorist groups operating in the developed countries have avoided narcotics smuggling and extensive distribution activities. Funds from drug smuggling and distribution represent only a small, and perhaps insignificant, part of the coffers of terrorists, who prefer more secure--and ideologically justifiable--methods of financing. Nonetheless, insurgents, farmers, and drug traffickers in the less developed countries (LDCs) that produce narcotics may find common cause, for various reasons, in resisting the central government. The governments themselves often perceive benefits in claiming that the terrorists and guerrillas of concern to them are supported by drug smuggling even when little evidence of such a connection exists.

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Pros and Cons of Drug Trafficking

Developed countries are the victims of both transnational terrorism and drug trafficking, while the LDCs are the supply countries for the drug traffic and the victims of insurgency. Using this perspective yields several hypotheses about possible linkages among terrorism, domestic insurgency, and narcotics.

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The popular view of contemporary terrorists and young leftist revolutionaries as alienated and rebellious youth has led to a mistaken perception of them as also being closely associated with the current anomic drug subculture. Although several prominent leftist terrorists, including Carlos, the Venezuelan-born operative of the Popular Front for the Liberation of Palestine

31 July 1979

(PFLP), and several members of the Baader-Meinhof Gang, have personally used drugs, most terrorists have avoided involvement with narcotics trafficking in developed countries.* Though the evidence is sparse, the following considerations may account for this self-restraint:

- -- There is nothing in the ideology of terrorists-whether they are leftists, rightists, nationalists, or anarchists--to justify the use of
 asocial substances. Drugs are seen as an opiate
 used to escape from society, not as a means of
 achieving the desired mobilization of the masses
 against the political system.
- -- Because drug trafficking is viewed by the public of most developed countries as an immoral means of getting cash by preying on the defenseless, involvement in the drug traffic would make the terrorists indirectly responsible for apolitical crimes that users commit against property and individuals in order to support their habits. The image of the degenerate pusher is not one which would-be revolutionary heroes wish to cultivate among potential supporters. Indeed, the Italian Communist Guerrillas murdered a drug user-dealer in Rome in late 1978.
- -- While many terrorists ultimately wish fundamentally to alter societal conditions, the social disintegration induced by drug trafficking is regarded as antipathetic to their aim of reform through revolution. Terrorists prefer quick, often violent, attacks on victims they can select, whereas the social consequences of drug trafficking are generally not susceptible to deliberate control.

*Reporting on the terrorist-drug connection is, at best, fragmen-
tary and at the worst, notoriously unreliable. Drug-related ac-
tivities by nominal members of a terrorist band are not necessary
ily known, much less condoned, by the organization's leadership
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- -- Most terrorist groups have more lucrative methods of securing funds. Sympathetic governments have funneled millions of dollars, as well as supplied arms, documentation, training, safe haven, and other forms of aid to client groups. ganizations wishing to avoid dependence on any one state sponsor can solve cash flow problems by bank robberies and kidnapings, which can be ideologically justified as selective expropriation operations against deserving targets and carried out with minimal organizational commitment and risk. These latter methods can be highly profitable. Basque separatists recently stole \$2 million from a Spanish bank, while a 1974 Montoneros kidnaping netted an estimated \$60 million.
- -- Success in adapting the clandestine tradecraft of terrorism to drug trafficking is largely dependent on the stage of drug processing or distribution. The risk is least in smuggling from a producing to a processing area but increases dramatically as the processed drug moves into the distribution networks of the developed countries. The latter stages of distribution--from the wholesaler to the consumer--involve a large number of people and for this reason are inherently insecure operations, presenting escalating risks of penetration by the authorities. Hence, in the infrequent cases in which some members of terrorist groups chose to acquire narcotics cash, the group is careful to restrict knowledge of planned attacks from their smuggling colleagues who risk exposure or compromise. Conversely, in those cases in which terrorists have not observed this precaution or have trafficked at the lower levels of the distribution system, the activity quickly attracted police attention.

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Despite this litary of concerns, some groups--particularly insurgents in LDCs--have reportedly supplied or protected the drug traffic. Sometimes, the following considerations can at least temporarily override the reservations listed above and lead terrorists to smuggle narcotics:

31 July 1979

- -- Some insurgent and terrorist leaders, or factional chieftains, may view narcotics trafficking as a way of lining their own pockets, recruiting new members, keeping restive members active, or cementing operational contacts for future use.
- -- Some clandestine arms smugglers have offered to accept narcotics rather than cash in exchange for their weapons. However, with the exception of Southeast Asian, and possibly South Asian smugglers, known instances of completed transactions are rare.
- -- Small, weak organizations may not have the government contacts or organizational wherewithal to engage in alternative forms of financing. Thus, rural insurgents in developing countries may derive revenue from protecting both narcotics production and trafficking or from marketing drugs themselves.
- -- Insurgents in LDCs may find potential supporters in farmers whose livelihood depends on uninter-rupted production of opium poppies, coca bushes, and marijuana plants. Although drug production is not an item on their political agenda, insurgents may encourage farmers' feelings of alienation from a government which attempts to suppress or eradicate narcotics production.
- -- The common "outlaw" status shared by drug traffickers, insurgents, and terrorists may facilitate social interaction among these actors.
 Possible points of contact include prison and
 the underground economy through which they
 acquire such illicit goods and services as
 firearms and false documentation.

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Attitudes of Governments

Government efforts to deal effectively with terrorism and narcotics trafficking are likely to face serious constraints. Operationally, governments hoping to crack down on narcotics traffickers may be stymied by local guerrillas protecting their turf. Farmers whose economies

31 July 1979

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depend upon a secure pipeline for their narcotics cash crop may enter into working arrangements with rural guerrillas and drug traffickers. This appears to have happened in Southeast Asia, Latin America, and South Asia. Terrorists and insurgents could also provide protection for drug peddler clients against a government enemy--real or manufactured by false-flag terrorist thugs.

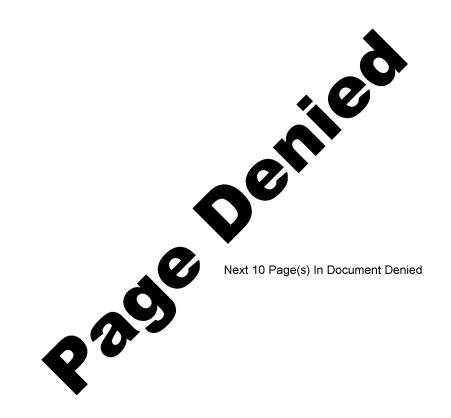
Domestic and international perceptions of a government's human rights performance also influence the extent and manner of its handling of drug smuggling and terror-For example, despite the lack of evidence of terrorist - drug runner connections, LDC governments are often tempted, for a number of reasons, to portray members of insurgent or terrorist movements as somehow involved with narcotics trafficking. First, governments may genuinely believe that insurgents, cultivators of illicit crops, and drug traffickers present a common threat to internal security. These groups, particularly when armed, contribute to political and social instability not only by challenging government authority and efforts at national integration, but also through reallocation of economic resources in ways harmful to the ruling elite. In Colombia, for example, the wealth generated from narcotics is redistributing economic and political power--in the latter case, through corruption--and thus displacing traditional social elites. Second, this tainting maneuver can be used domestically to drive a wedge between revolutionaries and their potential base of support, and internationally to acquire foreign military training and equipment ostensibly to be used for crackdowns on drug traffic but actually for suppressing dissent. For example, a few Latin American governments, believing themselves to be hamstrung in their efforts to combat insurgents and terrorists by US restrictions on military aid for nations abusing human rights, may be tempted to portray their efforts as being aimed at narcotics suppression.

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Moreover, some regimes have attempted to avoid domestic and international criticism by casting a blind eye toward--or even clandestinely supporting--murders by rightwing "Death Squads" of drug dealers, terrorists, and other perceived criminals. Such organizations allow the government to keep its overt human rights record unsullied while still dealing with various forms of social deviance.

31 July 1979

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